

REMARKS

Claims 1-8, 11-31 and 38-78 are currently pending in the application. Claims 1, 2, 23, 39, 46, 64 and 74 are hereby amended, and claims 9 and 10 are hereby canceled without prejudice. The foregoing separate sheets marked as "Listing of Claims" show all the claims in the application, with an indication of the current status of each.

The cancelation of claims or subject matter of claims from this application is without prejudice or disclaimer, and Applicant reserves the right to pursue canceled subject matter in one or more continuation applications.

Applicant thanks the Examiner for the indication that claims 74-78 are allowable.

Claim Objections: Examiner's Points 3-5

Claims 46, 64 and 74 have been objected to due to the informal error of reciting "a least" instead of "at least". Claims 46, 64 and 74 are hereby amended to correct this error, thereby addressing Examiner's objection.

In view of the foregoing, Applicant respectfully requests withdrawal of this objection.

Claim Rejections: 35 USC § 112, second paragraph: Examiner's Points #6-10

Claims 1, 5-7, 917, 19-21 and 40 (Point #7) and claims 2-4, 8, 18, 30-31, 38 and 41 (Point # (9)) stand rejected under 35 USC § 112, second paragraph, as indefinite, as follows: Claims 1 and 2 are rejected due to the recitation of "at least one unsaturated hydrocarbon group bound with a side chain of a skeleton". Examiner suggests that what might be meant is "said skeleton of silicon and oxygen".

Applicant has hereby amended Claims 1 and 2 to accord with Examiner's wording (i.e. "the skeleton..."), thereby overcoming these rejections. Independent claims 46, 64 and 74 contain the same language and have thus been amended in a similar fashion.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of these rejections.

Claims 46 and 64 stand rejected under 35 USC § 112, second paragraph, as indefinite due to the recitation of "said saturated hydrocarbon..." whereas the only previous reference to a hydrocarbon is to an unsaturated hydrocarbon.

Claims 46 and 64 are hereby amended to recite that the cyclic organic silica compounds do have, in addition to the recited unsaturated hydrocarbon, a saturated hydrocarbon group

bound with another side chain of the Si-O skeleton, thereby providing antecedent basis for the recitation of "said saturated hydrocarbon..."

Applicant submits that this amendment does not add new matter, since, in some embodiments, the claimed chemical structures obviously do have both saturated and unsaturated hydrocarbon group attached to the Si-O skeletons of the compounds, e.g. see Formulas 3, 4 and 5. Moreover, as was recognized in the Office Action on page 15, this same element was present in claims 74 and patentably distinguishes the prior art.

Applicant respectfully requests entry of this amendment, and reconsideration and withdrawal of this rejection.

Claim Rejections: 35 USC § 102(b): Examiner's Point #14

Claims 1-3, 5, 6, 9-12, 18, 30, 31, 38, 41, 46-49, 54, 57, 58 and 64-66 stand rejected under 35 USC § 102(b) as anticipated by Matsuki et al., (US 2003/0162408). This rejection is traversed in view of the present amendments to claims 1 and 2.

With respect to claims 1 and 2, and claims which depend therefrom (3, 5, 6, 9-12, 18, 30, 31, 38 and 41) Applicant draws Examiner's attention to the subject matter of now canceled claim 10, which recited "...wherein said plasma is plasma of mixture gas of rare gas and oxidizer gas or hydrogenated silicon gas." Thus, canceled claim 10 recited two possible mixtures: 1) rare gas and oxidizer gas; and 2) rare gas and hydrogenated silicon gas.

Examiner's comments concerning claim 10 are found on page 5 of the Office Action, and are as follows: "Regarding claims 9 and 10, Matsuki et al. discloses wherein said plasma or rare gas (Ar) [0082]; wherein said plasma is plasma of mixture gas of rare gas and oxidizer gas [0087]" (underline added). In other words, Examiner cites Matsuki as teaching only one of the two possible combinations of gases, the mixture gas of rare gas and oxidizer gas. Examiner does not cite Matsuki as teaching a mixture of rare gas and hydrogenated silicon gas. Applicant submits that this is because Matsuki does not teach such a combination.

Paragraph [0087] of Matsuki is as follows:

"In order to adjust the reaction in the vapor phase, it is effective to add a small amount of an inert gas, an oxidizing agent, or a reducing agent to the reaction chamber. Helium (He) and Argon (Ar) are inert gases and have different first ionization energies of 24.56 eV and 15.76 eV, respectively. Thus, by adding either He or Ar singly or both in combination in predetermined amounts, the reaction of the material gas in the vapor phase can be controlled. Molecules of the reaction gas undergo polymerization in the vapor phase, thereby forming oligomers. The

oligomers are expected to have a O:Si ratio of 1:1. However, when the oligomers form a film on the substrate, the oligomers undergo further polymerization, resulting in a higher oxygen ratio. The ratio varies depending on the relative dielectric constant or other characteristics of a film formed on the substrate.”

As can be seen, Matsuki makes absolutely no reference to hydrogenated silicon gas. Thus, without addressing Examiner’s allegations concerning the other teachings of Matsuki, and solely to expedite prosecution, Applicant has hereby amended claims 1 and 2 to recite that the plasma utilized in the method is a mixture gas of rare gas and hydrogenated silicon gas. Applicant submits that this amendment does not add new matter since this feature is taken entirely from now-canceled claim 10. Applicant also notes that by having this element, the film-forming speed is increased and the specific inductive capacity is reduced when hydrogenating silicon gas, such as silane (SiH_4) is added, as described in the further embodiment in the specification, especially in paragraphs [0171] and [0173] of the application as published, and as illustrated in figures 24 and 25. This mixture is clearly not taught or referred to any way by Matsuki, and particularly not as suitable for use in a method such as that which is claimed. Therefore, Matsuki does not anticipate claims 1 and 2 (or their corresponding dependent claims) in their present form.

With respect to claims 46-49, 54, 57, 58 and 64-66, which are or depend from independent claims 46 and 64, Applicant refers Examiner to the stated reasons for allowance of claims 74-78 on page 15 of the Office Action. In the reasons, Examiner states that the feature that confers novelty is that “...said saturated hydrocarbon group has a least two carbon atoms...” in combination with the remaining elements of the claim. Applicant notes that claims 46 and 64 also recite “wherein said cyclic organic silica compounds have a saturated hydrocarbon group bound with another side chain of said skeleton”, and as amended herein, now clearly and correctly refer back to a recited saturated hydrocarbon group. Based on the allowance of claims 74-78 and the similarity of the features of claims 46 and 64 to these allowed claims (and in view of the present amendments to claims 46 and 64 which correct/clarify the claim language), Applicant submits that claims 46 and 64 are also allowable and not anticipated by Matsuki. Since claims 46 and 64 are allowable, claims depending from these two claims (50-53 and 62; and 72-73) should also be allowable.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of these rejections.

Claim Rejections: 35 USC § 103(a): Examiner's Point #16

Claims 7, 13-16, 19-21, 23-29, 40, 45, 50-53, 62 and 72-73 stand rejected as obvious over Matsuki (as above). This rejection is traversed.

Of these claims, claims 7, 13-16, 19-21 and 40 depend either directly or indirectly on claims 1 and 2, which have hereby been amended as described in the preceding section. Since the amendment to claims 1 and 2 renders those claims patentable and not anticipated by Matsuki (as established above, Matsuki does not show or render obvious the use of a mixture gas of rare gas and hydrogenated silicon gas), all claims depending therefrom are also patentable. Applicant thus requests reconsideration and withdrawal of the portion of this rejection that pertains to claims 7, 13-16, 19-21 and 40.

With respect to claims 23 and claims 24-29 and 45 (which depend indirectly from claim 23), Applicant has hereby amended claim 23 to recite that the concentration of carbon in the vicinity of the surface of the porous insulating film changes continuously or stepwise. Support for this amendment is found in the specification as filed, for example, in paragraph [0217] of the application as published. Applicant notes that claim 42, which was not rejected as obvious over Matsuki, recites this feature, and since claim 42 is not obvious in view of Matsuki, then claim 23 as amended is also not obvious in view of Matsuki. Matsuki does not teach that the concentration of carbon in the vicinity of the surface of the porous insulating film may change continuously or stepwise.

With respect to claims 50-53 and 62 (which depend from claim 46) and claims 72-73 (which depend from claim 64), the reasons for allowability of claims 46 and 64 is discussed in the previous section. Since the subject matter of claims 46 and 64 is allowable, the subject matter of dependent claims 50-53, 62 and 72-73, is also allowable, i.e. is not obvious over Matsuki. The allowance of claims 74-78 based on the feature that the saturated hydrocarbon group has at least two carbon atoms should apply equally to claims 46 and 64, and all claims that depend on these two claims.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of this rejection.

Other matters

Claim 39 is hereby amended to recite a porous insulating film of claim 23, instead of the "method" of claim 23. Claim 23 does not recite a method, but rather a porous insulating film.

Applicant submits that this amendment does not add any new matter, being entirely informal in nature, and respectfully requests entry of this amendment and allowance of claim 39.

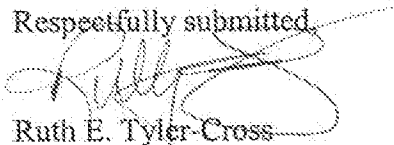
Concluding Remarks

In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1-8, 11-31 and 38-78 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at 703-787-9400 (fax: 703-787-7557; email: ruth@wcc-ip.com) to discuss any other changes deemed necessary in a telephonic or personal interview.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,


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